Q-354R2

SVE BULLETIN

SPECIAL VEHICLE ENGINEERING – BODY BUILDERS ADVISORY SERVICE

Website: www.FordBBAS.com (click "Contact Us")
Toll-free: (877) 840-4338

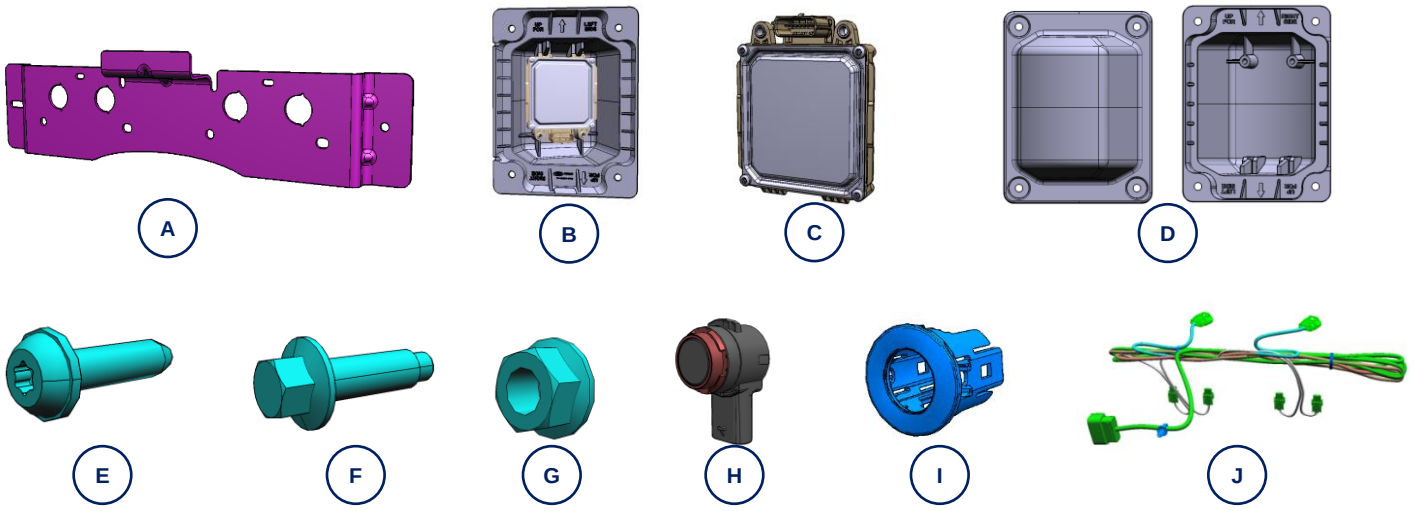
2023 TRANSIT BLIS & PARK AID KIT FOR UPFITTERS ON CC & CA ONLY

REVISION	UPDATE	REVISION DATE
Q-354R2	UPDATE INCLUDES: BULLETIN TITLE, FORMAT, ILLUSTRATION CLARIFICATIONS, AND PARK AID OUTER SENSOR SPACING LIMIT.	16JAN2024
Q-354R1	REMOVE PICTURE AND ADD NEW SECTION	7/26/2022
Q-354	INITIAL RELEASE	7/16/2022

MODEL(S) AFFECTED:
2023MY – BEYOND, TRANSIT CHASSIS CAB & CUT-AWAY- ORDERED WITH OPTION CODE (65A)

ISSUE / DESCRIPTION:
To provide guidance and instruction for upfitters intending to install BLIS & Park Aid On Chassis Cabs and Cut-Aways. Feature can not be added to vehicles not ordered with option code (65A)

BLIS & PA ASSEMBLY CONTENT



BRACKET			
ITEM	**QUANTITY**	**PART NUMBER**	**DESCRIPTION**
A	1	PK4T-14D190-A*	SENSOR BRACKET

BLIS			
ITEM	**QUANTITY**	**PART NUMBER**	**DESCRIPTION**
B	2		BLIS SUB ASSY
C	2	NC3T-14C689-C*	BLIS RADAR
D	2	PK4T-14D189-A*	BLIS HOUSING
E	4	W506945-S450B	Screw 4x16 PC TI TFP TH
F	4	W500224-S439	SC M08x1.25x25.0 HEX FLNG HD PIL
G	4	W520413-S450	NUT M8 HF 8

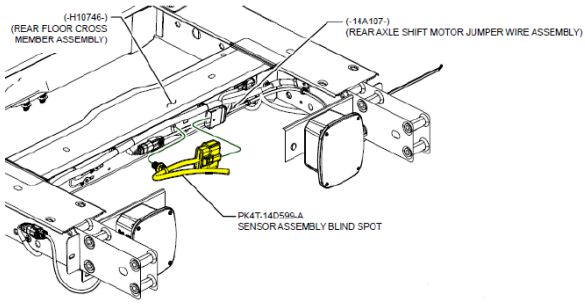
PARK AID			
ITEM	**QUANTITY**	**PART NUMBER**	**DESCRIPTION**
H	4	JU5T-15K859-B*	PARK AID SENSOR
I	4	JK2T-15K872-C*	PA SENSOR BRACKET HOLDERS

WIRING HARNESS			
ITEM	**QUANTITY**	**PART NUMBER**	**DESCRIPTION**

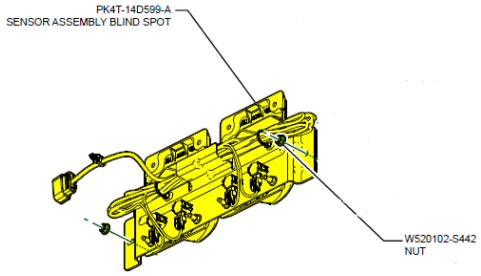
J	1	PK4T-15K868-FA*	Wiring Harness

I. DISASSEMBLY INSTRUCTIONS FOR DELIVERED BLIS & PARK AID PACKAGING

1. Disconnect BLIS & PA wiring harness connector from main vehicle harness.



2. Remove PK4T-14D599-A* BLIS & PA assembly from vehicle. Unscrew 2x W520102-S442 nuts



3. Remove PK4T-15K868-FA* wiring harness.
   a. Disconnect connectors – 2x BLIS Radar & 4x PA sensors
   b. Take out 2x firtree fasteners
4. Remove 2x BLIS assembly (Housing + Radar)
   a. Unscrew 4x W500224-S439 screws and 4x W520413-S450 nuts
5. Remove 4x PA sensors and holders
6. Throw away EOL Bracket (PK4T-14D190-A*), part no longer required
7. Below you will find an instruction giving key guidelines to where to install, for a fully functional system.

II. BLIS INSTALLATION INSTRUCTIONS

Mounting the BLIS Sensor Pods to vehicle. Before you begin to drill holes ensure that the placements of the Pods are within the tolerances specified. Area and placement are crucial. See below required tolerances and angles that should be used to achieve required placement. The Sensor FOV, Angle, Pitch and Roll will need to be considered.

1. BLIS Housing and Radar assembly mounting zone.

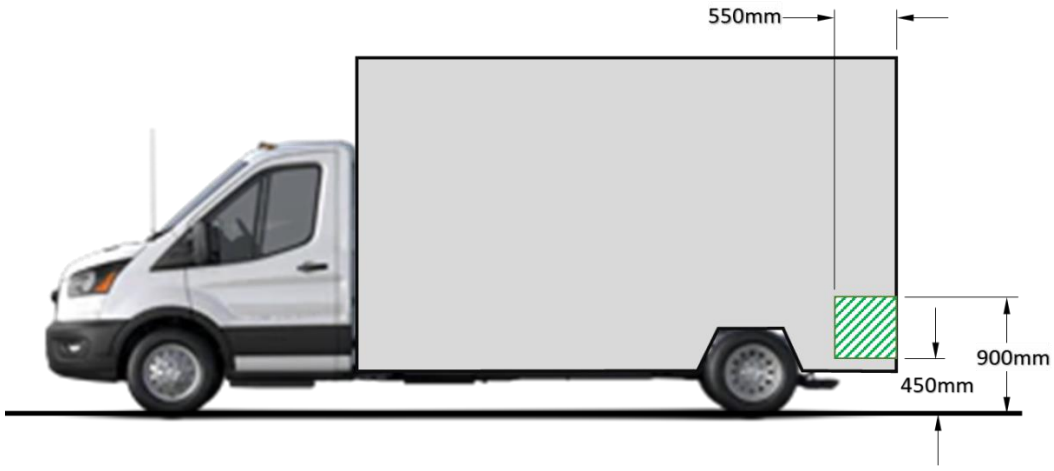
- ***Please install the radar as close as possible to the end of the vehicle***.

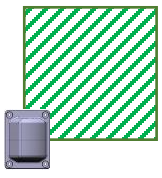
Outer edges of pod must be:

- **Located within 550mm from rear edge of vehicle.**
- **Mounting height needs to be between**
- **450mm and 900mm from road surface.**

OK

SENSOR POD FULLY WITHIN THE MOUNTING ZONE

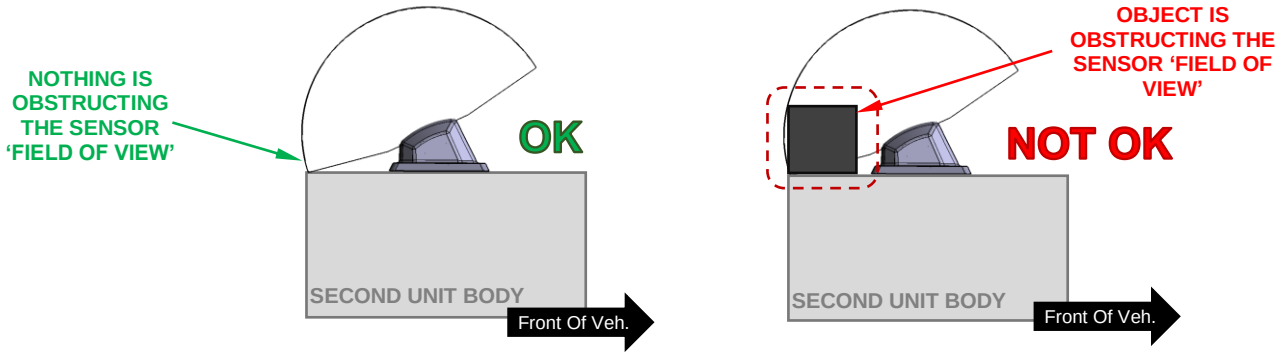


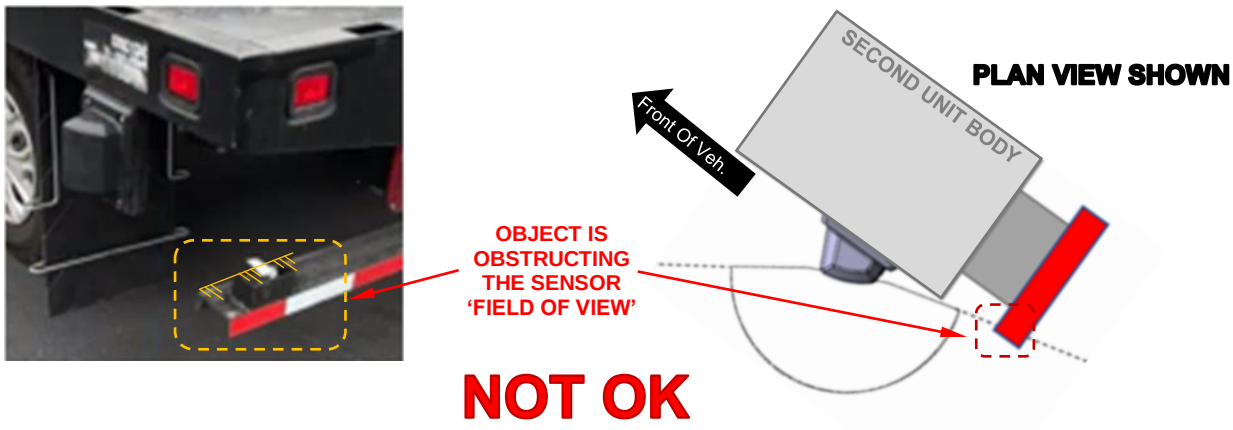


NOT OK

2. Field of View (FoV)

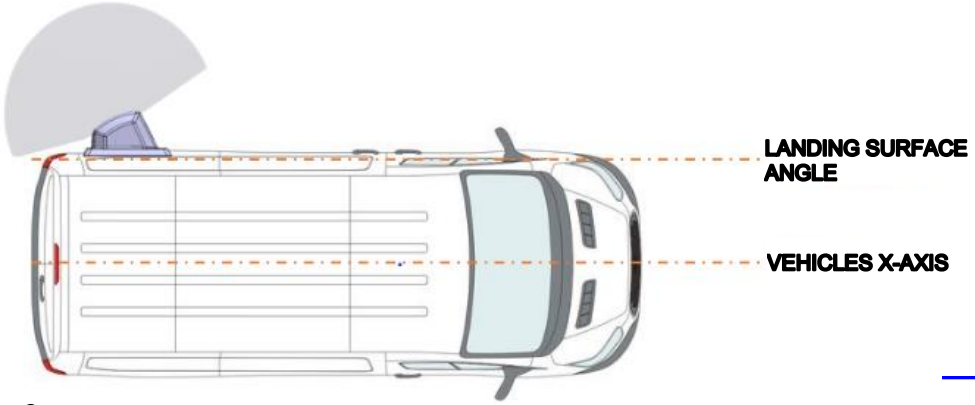
- The Sensor ‘Field Of View” will need to be free of Obstructions.





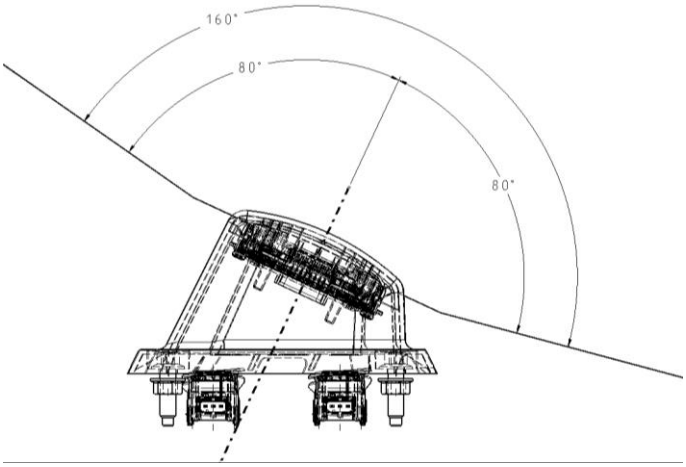
3. ANGLE

- Landing surface of sensor pods should be mounted on surface parallel to vehicle X-Axis
- Allowed tolerance deviations +/- 3



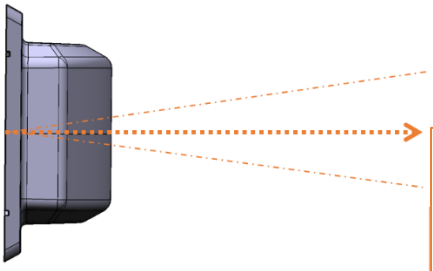
	Mounting Position	Tolerance	
	Nominal	Min	Max
α	20,25,27,30,37,39,40°	-3°	+3°
β	0°	-5°	+5°
gamma¹	0°	-4°	+4°
Δx	300mm	-200mm	+200mm
Δy	100mm	-50mm	+50mm
h_z	600mm	-100mm	+250mm

Table 1: BSD/RCTA mounting orientation requirements



PLAN VIEW – Reference Only, Not To Scale

4. Pitch Angle



Sensor Pitch angle Should be 0° = horizontal
allowed tolerance Deviations +/- 5°

	Mounting Position	Tolerance	
	Nominal	Min	Max
α	20,25,27,30,37,39,40°	-3°	+3°
β	0°	-5°	+5°
gamma'	0°	-4°	+4°
Δx	300mm	-200mm	+200mm
Δy	100mm	-50mm	+50mm
h_z	600mm	-100mm	+250mm

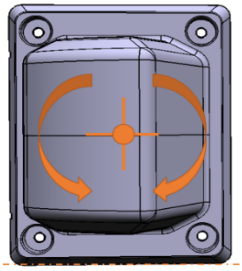
Table 1: BSD/RCTA mounting orientation requirements

5. Sensor Angle Roll

Sensor roll angle Should be 0°
Lower edge of Sensor pod to be parallel to the ground.
Allowed Tolerance Deviations +/- 4°

	Mounting position	Tolerance	
	Nominal	Min	Max
α	20, 25, 27, 30, 37, 39, 40°	-3°	+3°
β	0°	-5°	+5°
gamma'	0°	-4°	+4°
Δx	300mm	-200mm	+200mm
Δy	100mm	-50mm	+50mm
h_z	600mm	-100mm	+250mm

Table 1: BSD/RCTA mounting orientation requirements

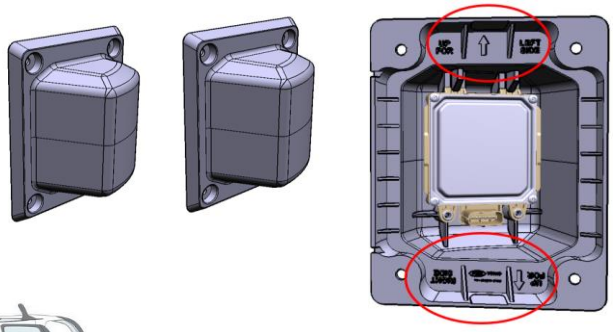


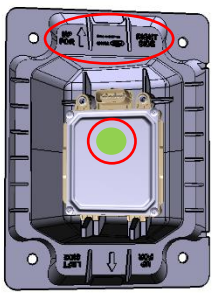
LOWER EDGE OF SENSOR POD

GROUND (REF.)

6. Sensor Pods Side Selection

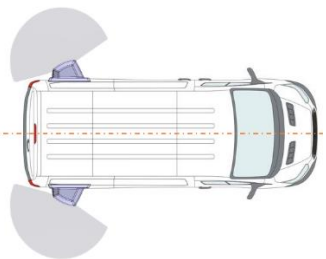
- Sensor pods needs to be positioned according to markings and direction arrows.
- 2 identical sensor Pods are supplied.
- Sensor pod with a green marked Radar MUST be mounted to the RIGHTHAND SIDE





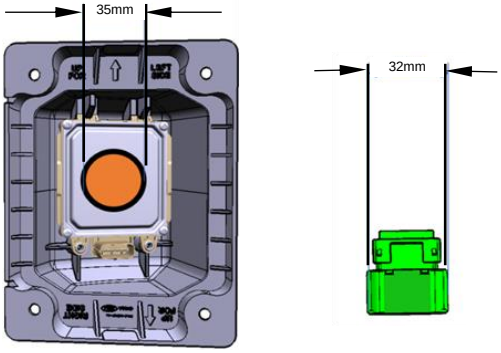
Left Side of Vehicle

Right Side of Vehicle



7. Hole Placement To Connect Sensor Pod

- Hole in Vehicle Side needed to make connection to radar sensor
- The hole needs to be placed in center of sensor pod
- Hole should be fully covered by sensor pod and not be visible from outside. The Upfitter must ensure they install a grommet or any other sealing concept to avoid water ingress into vehicle through the wiring hole
- Before drilling hole take into consideration that an anticorrosive will need to be used where drilling will have removed current protective coating in this area

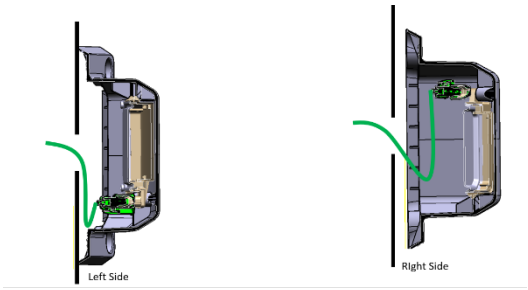


RECOMMENDED HOLE SIZE - 35mm (CONNECTOR WIDTH 32mm)

8. Cable Management

- The hole position and wiring length outside of vehicle side to ensure a dripping-loop to avoid water exposition of radar connector

NOTE: FORD RECOMMENDS THE SENSOR PODS SHOULD NOT BE PAINTED AND WE CANNOT GUARANTEE PERFORMANCE IF DONE SO.



III. BLIS CHECK AFTER RETROFIT

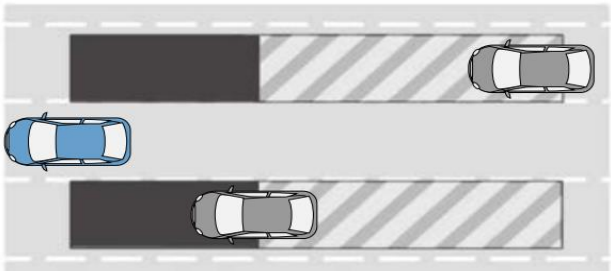
1. BLIS System Interface Check:

a. Perform an ignition cycle. The BLIS LEDs in the exterior mirrors (or in A-Pillar in case vehicle has been ordered without mirrors/doors) shall perform a 3 seconds prove-out
b. Switch BLIS ON and OFF via Center Stack display or Instrument Cluster menu. The BLIS LEDs shall confirm each user action with a twice flash
c. No faulty message shall appear on Center Stack display or Instrument Cluster.

2. BLIS Performance Check:

(Short **PASS** / **FAIL** real world road evaluation after System Interface Check has been performed)

a. Start the vehicle. Drive above 10kph (The BLIS feature does not operate in park/P or reverse/R)
b. Verify that the BLIS LEDs are being switched ON while a different vehicle is in the Blind Spot Zone.
Note: system is intended to alert only on vehicles. It is not designed to detect parked vehicles, pedestrians, animals, or other infrastructures.
c. Repeat verification for the following use cases:
    i. Other vehicles overtaking the retrofitted vehicle
    ii. Retrofitted vehicle overtakes another vehicle

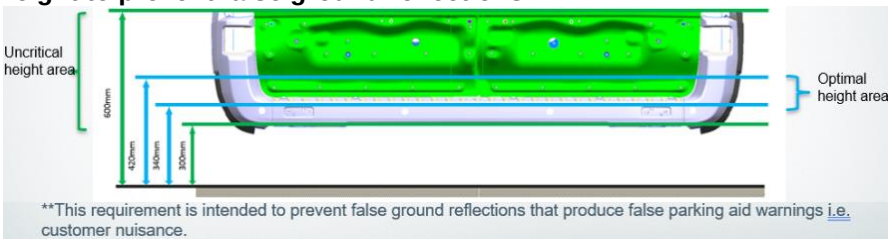


NOTE: THIS INFORMATION HAS BEEN EXTRACTED FROM USERS MANUAL

IV. PARKING AID SENSOR INSTALLATION INSTRUCTIONS

1. Define rear outer and rear inner sensor height to prevent false ground reflections

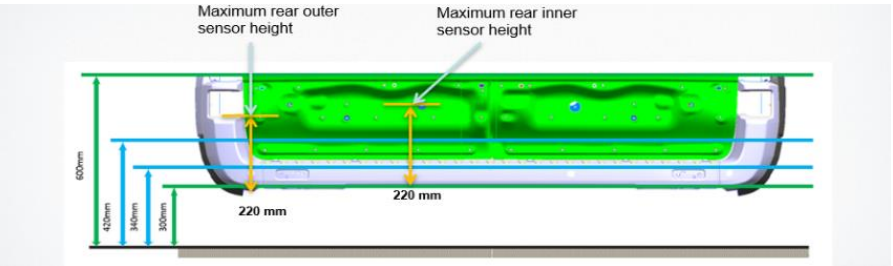
a. Define an area limited by 2 straight parallel lines placed at 340 mm and 420 mm from the max rear down ground level. This area will define the optimal height for the rear inner and outer sensors.


Uncritical height area
600mm
420mm
340mm
300mm
Optimal height area
**This requirement is intended to prevent false ground reflections that produce false parking aid warnings i.e. customer nuisance.

b. Define an area limited by 2 straight parallel lines placed at 300 mm and 600 mm from the max rear down ground level. This area will define the uncritical height for the rear inner and outer sensors. Please note for best system performance it is ideal to place the sensors on the optimal height area.

2. Define rear outer and rear inner sensor height to assure fascia coverage

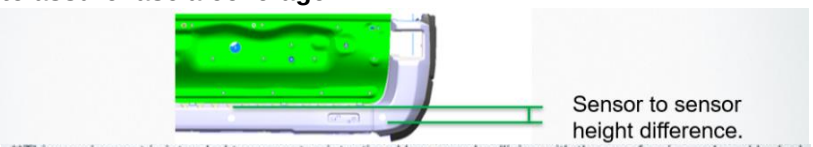
a. Define the lowest point of the fascia at each rear inner and outer sensor plane, create an offset of 220 mm from the lowest point of the fascia. This point will represent the maximum height at which the sensor can be packaged. This height may vary from sensor to sensor upon vehicle geometry.



**This requirement is intended to prevent unintentional low speed collision with the bottom of the rear fascia produced by lack of sensor field of view coverage.

3. Define rear outer and rear inner sensor height to assure fascia coverage

a. Verify the inner sensor to outer sensor height difference is no greater than the optimal distance of 200 mm; worst case it is no greater than 300 mm, which is the limit of the critical area.

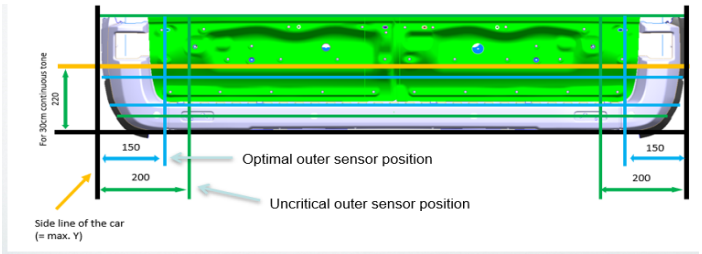


**This requirement is intended to prevent unintentional low speed collision with the rear fascia produced by lack of sensor field of view coverage.

4. Define rear outer sensor position to assure adequate lateral coverage

a. Define the sideline of the car (maximum Y), draw a vertical line tangent to this point, create an offset of 150 mm from this line and draw a parallel vertical line. The area delimited by these two lines represents the optimal outer sensor location to maintain side vehicle coverage.

b. Define the sideline of the car (maximum Y), draw a vertical line tangent to this point, create an offset of 200 mm from this line and draw a parallel vertical line. The area delimited by these two lines represents the uncritical outer sensor location to maintain side vehicle coverage. Please note for best system performance it is ideal to place the sensors on the optimal height area.

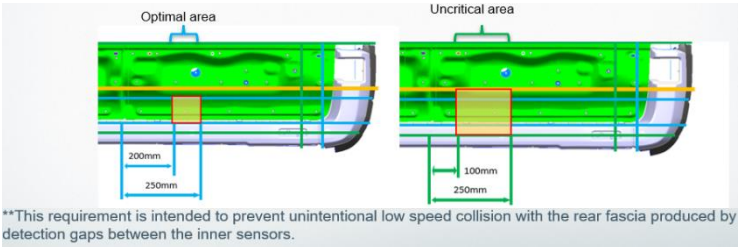


**This requirement is intended to meet the system side vehicle coverage requirements.

5. Define rear inner sensor location

a. Define an area limited draw an area limited by 2 straight vertical parallel lines placed at 200 mm and 250 mm from the center of the vehicle. This area will define the optimal position for the rear inner sensors.

b. Define an area limited draw an area limited by 2 straight vertical parallel lines placed at 100 mm and 250 mm from the center of the vehicle. This area will define the optimal position for the rear inner sensors. Please note for best system performance it is ideal to place the sensors on the optimal area.

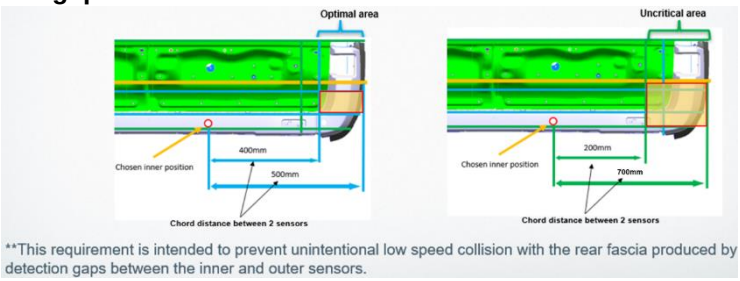


**This requirement is intended to prevent unintentional low speed collision with the rear fascia produced by detection gaps between the inner sensors.

6. Adjust rear outer sensor position to prevent detection gaps between inner and outer sensors

a. Once the rear outer sensor position to maintain side vehicle coverage has been defined, this position must be adjusted to prevent detection gaps between the inner and the outer sensors as follows:

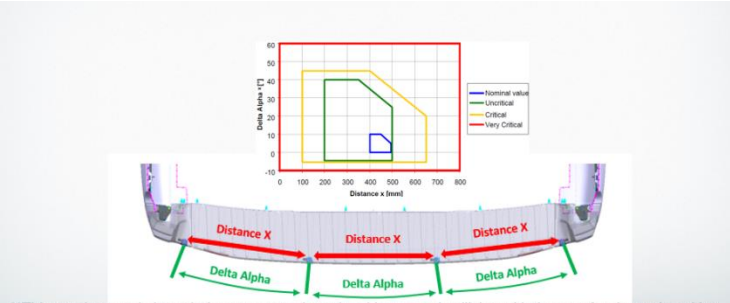
b. Define an area limited by 2 straight parallel lines placed at 400 mm and 500 mm from the rear inner sensor position. This area represents the optimal outer sensor location to prevent detection gaps between the inner and the outer sensors.



**This requirement is intended to prevent unintentional low speed collision with the rear fascia produced by detection gaps between the inner and outer sensors.

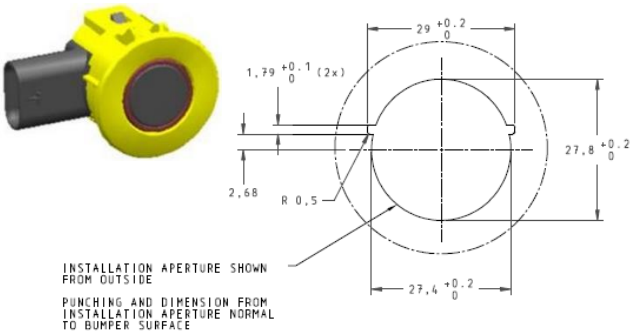
c. Define an area limited by 2 straight parallel lines placed at 200 mm and 700 mm from the rear inner sensor position. This area represents the uncritical outer sensor location to prevent detection gaps between the inner and the outer sensors. Please note for best system performance it is ideal to place the sensors on the optimal height area.

7. **Rear outer and inner sensor Alpha angle**
   a. To determine the proper delta alpha angle between rear sensors, the chord distance (Distance X) between sensors shall be used to select a proper Delta Alpha angle according to the following table. Please NOTE this distance shall be measured without considering the sensor height difference, it shall be measured from the top view of the fascia as shown in the picture provided below.
   b. The delta alpha angle selected shall be within the nominal and uncritical areas, all other areas are not acceptable.



**This requirement is intended to prevent unintentional low speed collision with the rear fascia produced by detection gaps between sensors.

8. **Park Aid Sensor Holder hole orientation**
   a. The Parking sensor itself is angled at 8° facing upwards
   b. Hence the hole for the sensor holder must be cut out to orientate in such a way
   c. NOTE: make sure Left outer side has clearance for the right-angled connector, connector and wiring
   d. Reference dimensions



V. PARK AID SYSTEM CHECK AFTER RETROFIT

1. **Test 1**
   a. First test is checking the detection of park sensors one by one for each range:

SENSOR	REAR			
	LEFT OUTER	LEFT INNER	RIGHT OUTER	RIGHT INNER
RED ZONE				
YELLOW ZONE				
GREEN ZONE	N/A		N/A	

2. **Test 2**
   a. Second test is checking the measurement to obstacle when transition of park sensors range is happening
   b. Vehicle should be driven until first zone detected, capture measurement of range detected
   c. Ensure measurements fall in line with specs below
      i. Rear Inner Park Aid – 175cm – 200cm
      ii. Rear Outer Park Aid – 60cm – 90cm

SENSOR	REAR			
	LEFT OUTER	LEFT INNER	RIGHT OUTER	RIGHT INER
ZONE DETECTION				

VI. WIRING HARNESS CONNECTOR INSTALLATION INSTRUCTIONS

1. **Parking Aid Sensors**
   a. Ensure wiring connectors are connected to the appropriate sensors. They can be more easily identified by the circuit color in cavity 2 (middle/center wire) of the connector.
      i. C4011 Right Outer (RO) YE-OG (VMP17)
      ii. C4421 Right Inner (RI) BN (VMP30) Late production - YE-GY (VMP16)
      iii. C4420 Left Inner (LI) GN-OG (VMP29) Late production - WH-OG (VMP14)
      iv. C4009 Left Outer (LO) YE-GN (VMP15)
2. **BLIS Radars**
   b. Ensure wiring connectors are connected to the appropriate modules. They can be more easily identified by the circuit color in cavity 4 (next to WH-OG CAV 5) of the connector.

      i. Right BLIS Module (R) VT-BN (CRBD01)
      (NOTE: Right BLIS CONNECTOR MUST BE INSTALLED ON RADAR WITH GREEN MARK)
      ii. Left BLIS Module (L) WT-GN (CRBD03)

VII. DISCLAIMER

The instructions above must be followed to guarantee performance of the systems and any deviations to said instructions would be of the upfitters own choosing and any performance drop Ford could not be considered responsible.

Refer to the Body Builder Layout Book for additional guidelines and recommendations. If you have any questions, please contact the Ford Body Builders Advisory Service as shown in the header of this bulletin